

**Apparatus and Method for Distributed Software  
Implementation of OSPF Protocol**

**ABSTRACT OF THE DISCLOSURE**

- 5           The present invention is an OSPF flooding proxy mechanism for taking  
advantage of a distributed hardware architecture to achieve a highly scaleable OSPF  
implementation capable of supporting a large number of nodes in an area. Given the  
widespread interest in MPLS explicit route based traffic engineering within an  
autonomous system, and given that most TE mechanisms work best when complete  
10 network topology is available, such an OSPF implementation is highly desirable. Also,  
the next generation terabit router architectures with multiple levels of processor  
hierarchies and spanning multiple shelves make such protocol implementations very  
compelling. One embodiment of the invention includes an apparatus for communicating  
an intra-autonomous system link state routing protocol with nodes in a network. The  
15 apparatus includes a controller having at least one processor associated therewith for  
performing route calculation and maintaining a link state database of said network. At  
least one delegate port card is coupled to the controller and has at least one separate  
processor associated therewith. The delegate port card has selected software  
functionality of the intra-AS link state routing protocol assigned thereto. The delegate  
20 port card is operable to process communications associated with said selected software  
functionality substantially independently of said controller.